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## 70050M4

### *80W, FIVE OUTPUT PFC POWER SUPPLY (47 - 440Hz)*

The **70050M4** power supply contains all the necessary circuitry for complete AC power line compliance with aeronautics specification RTCA/DO-160D and Boeing's D6-44588. Offering five standard output voltages and providing over 80W of continuous output power, the **70050M4** is well suited for many avionics or off-line applications requiring a compact and rugged power supply solution.

The **70050M4** minimum efficiency exceeds 70% at ½ to full output load over the entire input range of 97-134Vrms. The supply is capable of providing 72W of uninterrupted output power during momentary input AC brown-out conditions of 200mSec duration. A 40x40x10mm fan is recessed in the supply's perforated top cover allowing the supply to deliver full 80W output power over a wide operating temperature range (-25°C to +75°C) without the need for derating.



Each of the five standard outputs are independently post regulated in order to provide independent over-current protection as well as optimum cross regulation while powering unbalanced or dynamic loads.

Weighing just 28 ounces, the **70050M4** is housed in an aluminum enclosure with outer dimensions of 8.50" X 4.75" X 1.35". The U-chassis enclosure accepts six #4 screws for easy mounting. Interconnection is accomplished with a single CompactPCI right angle power connector protruding from the supply's PCB. Mounted to a 60mil piece of sheetmetal, the **70050M4** can easily be adapted to a 6U double-wide CompactPCI bus enclosure.

## FEATURES

▶	EXCEEDS BOEING SPECIFICATION D6-44588 (AA) FOR POWER FACTOR AND INPUT CURRENT HARMONIC DISTORTION LEVELS @ 400 ± 10% Hz
▶	EFFICIENCY: 70% MINIMUM AT FULL RATED LOAD
▶	WIDE INPUT RANGE = 115 ± 15% VAC, 47-440Hz
▶	COMPLIES WITH RTCA/D0-160D EMI & SUSCEPTIBILITY SPECIFICATIONS
▶	ACTIVE INRUSH CURRENT LIMITING (7Apk)
▶	INPUT TRANSIENT SUPPRESSION - 30J/2mSecs
▶	SIZE = 8.50" X 4.75" X 1.35", WEIGHT = 28oz.
▶	OVER-CURRENT PROTECTION ON EACH OUTPUT (AUTO RESET)
▶	FIVE STANDARD OUTPUTS ( ±5V, +3.3V, ±12V)
▶	200mSec HOLD-UP TIME
▶	AC FAIL STATUS LINE (TTL)
▶	INTERNAL OVER-TEMPERATURE SHUTDOWN (100°C) WITH AUTO-RESET

## STANDARD OUTPUTS

OUTPUT	+3.3V	+5V	-5V	+12V	-12V
PARAMETER					
VOLTAGE REGULATION	±3%	±2%	±4%	±5%	±5%
OUTPUT CURRENT	3A	7A	1A	1.5A	1A
MINIMUM LOAD	0A	0A	0A	0A	0A
PK-PK RIPPLE + NOISE (20MHz)	50mV	50mV	50mV	50mV	50mV
OVER-CURRENT TRIP POINT	3.75A	12A	2.25A	2A	2A

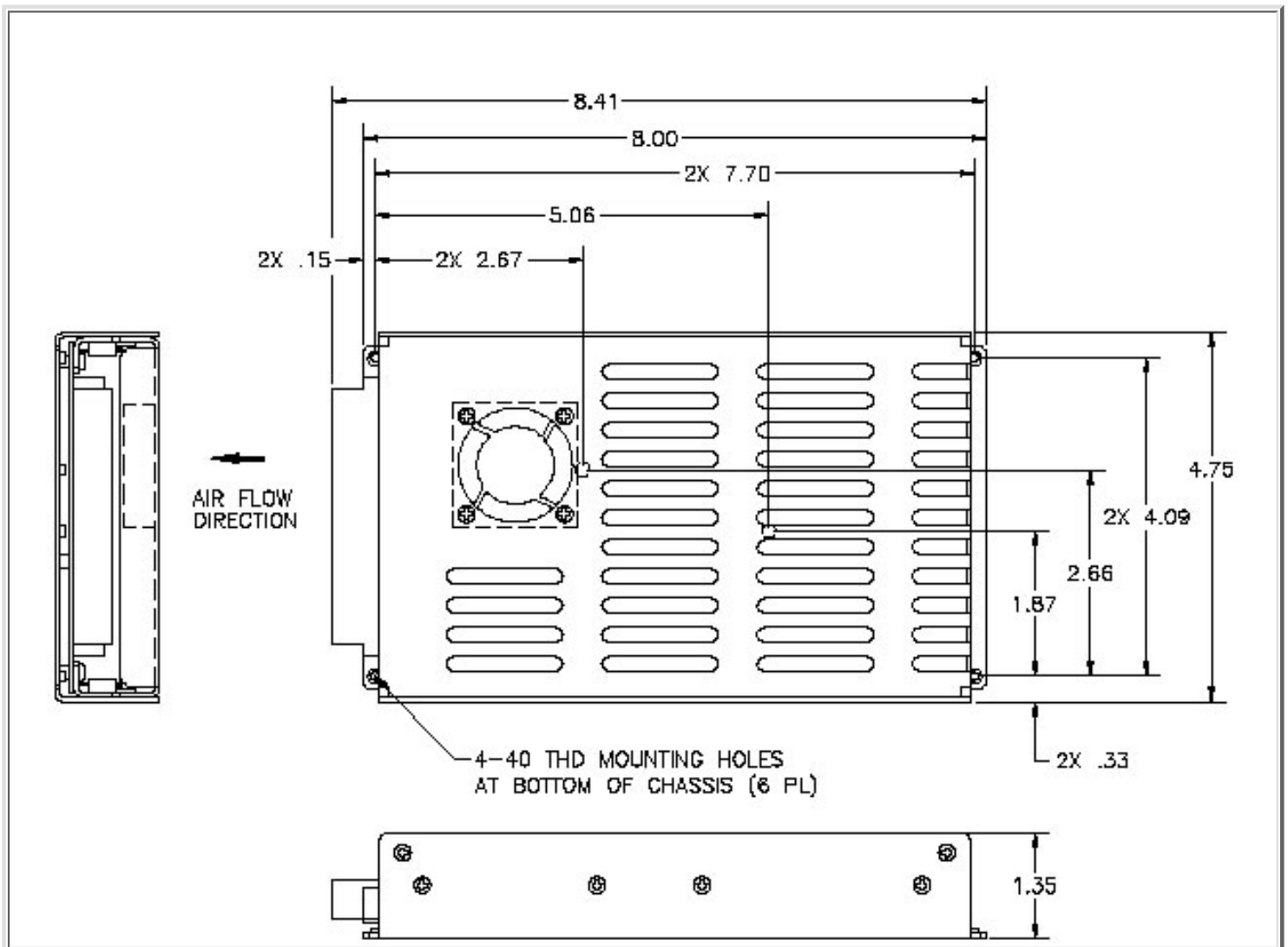
## INTERCONNECTION

CONNECTOR P1: POSITRONIX PC1H47M400A1	
PIN NO.	SIGNAL NAME

1	+3.3 VDC
2	+3.3V RTN
3	+3.3 VDC
4	+3.3V RTN
5	-5 VDC
6	-5 VDC RTN
7	-5 VDC
8	-5 VDC RTN
9	-12 VDC
10	-12V RTN
11	+12 VDC
12	+12V RTN
13	+12 VDC
14	+12V RTN
15	+5 VDC
16	+5 VDC RTN
17	+5 VDC
18	+5 VDC RTN
19	+5 VDC
20	+5 VDC RTN
21	DC RTN
22	DC RTN
23	DC RTN
24	UVS_ENABLE
25-26	SPARE
2627	OVERTEMP

28-35	SPARE
36	ACGOOD
37-41	SPARE
42	CHASSIS
43	CHASSIS
44	CHASSIS
45	CHASSIS
46	AC LINE
47	AC NEUTRAL

## MECHANICAL DIAGRAM



# ELECTRICAL SPECIFICATIONS

UNLESS OTHERWISE SPECIFIED THE FOLLOWING TEST CONDITIONS APPLY: Ta=25°C., CONSTANT RESISTIVE LOADS APPLIED TO OUTPUT, VIN=115Vrms, 400Hz, < 1% THD SINUSOID

## INPUT CHARACTERISTICS

PARAMETER	70050M4	REMARKS
INPUT VOLTAGE RANGE	97-134Vrms	COMPLIES WITH NORMAL/ABNORMAL INPUT VOLTAGES PER RTCA/DO-160D
INPUT FREQUENCY RANGE	400Hz ± 10%	OPERATES @ 60Hz WITH REDUCED DISTORTION PERFORMANCE
LEAKAGE CURRENT	<5mA	AC LINE/NEUTRAL TO CHASSIS, @ 115Vrms / 400Hz
INRUSH CURRENT	<7.0Apk	
TOTAL HARMONIC DISTORTION (INPUT CURRENT)	<3.5%	1/2 TO FULL OUTPUT LOAD
INDIVIDUAL HARMONICS AC CLEAN	EVEN: < 1% $I_f / n$ , (n<10) EVEN: <0.1% $I_f$ (n ≥10) ODD: < 30% $I_f / n$ ODD TRIPLENS: < 15% $I_f / n$	$I_f$ = FUNDAMENTAL CURRENT $V_{thd} \leq 1\%$ , n = 1 THRU 62, n = ORDER OF HARMONIC
INDIVIDUAL HARMONICS - DISTORTED INPUT	EVEN: < 1% $I_f / n + V_n$ (n<10) EVEN: <0.1% $I_f + V_n$ (n ≥10) ODD: < 30% $I_f / n + V_n$ ODD TRIPLENS: < 15% $I_f / n + V_n$	$V_{thd} \geq 5\%$ $V_n$ = CORRESPONDING INPUT VOLTAGE HARMONIC
POWER FACTOR	0.90 min	$P_{out} > 20W$
TRANSIENT SURGE WITHSTAND	30J / 2mSec	NORMAL MODE
CREST FACTOR (CURRENT)	1.314 - 1.514	RATIO OF PEAK/RMS
START-UP TIME	<500mSec	OUTPUTS WITHIN REGULATION
OUTPUT OVERSHOOT / UNDERSHOOT	NONE	
CONDUCTED EMISSIONS	RTCA/DO-160D	CATEGORY H EQUIPMENT
STORAGE TEMPERATURE RANGE	-55°C TO +100°C	
OPERATING TEMPERATURE RANGE	-25°C TO 75°C	AMBIENT, NO DERATING REQUIRED

# OUTPUT CHARACTERISTICS

PARAMETER	70050M4	REMARKS
RATED OUTPUT POWER	80W	CONTINUOUS
RATED OUTPUT VOLTAGES		SEE "STANDARD OUTPUTS" TABLE
TEMPERATURE STABILITY COEF.	0.01% / °C	OUTPUT VOLTAGE
OUTPUT RIPPLE + NOISE (pk - pk)	50mVpk-pk	20MHz BANDWIDTH (EACH OUTPUT)
LINE REGULATION	<0.5%	INDIVIDUAL OUTPUT DEVIATION FOR ± 20%, STEP CHANGE IN LINE VOLTAGE
LOAD REGULATION	OUTPUTS REMAIN WITHIN REGULATION	50% STEP CHANGE IN INDIVIDUAL OUTPUT LOAD
HOLD-UP TIME	200mSec	@ 72W COMBINED OUTPUT POWER
ISOLATION VOLTAGE INPUT TO OUTPUT and INPUT/OUTPUT TO CHASSIS	1500Vac	LESS THAN 250 $\mu$ Arms LEAKAGE CURRENT CONTINUOUS FOR 60 SECOND TEST DURATION
OUTPUT VOLTAGE ADJUSTMENT	NONE	
AC GOOD-H STATUS LINE	HIGH STATE, 3.5Vmin LOW STATE, 0.5Vmax @ 3mA SINK CURRENT	ACTIVE HIGH (W/ RESPECT TO DCrtn) UPON DETECTION OF INPUT AC > 95 ± 2Vrms. ASSERTS LOW 100±20mSEC UPON DETECTION OF INPUT AC SOURCE FALLING BELOW 95 ± 2Vrms
OVERTEMP-L STATUS LINE	HIGH STATE, 3.5Vmin LOW STATE, 0.5Vmax @ 3mA SINK CURRENT	ACTIVE LOW (W/ RESPECT TO DCrtn) UPON DETECTION OF POWER SUPPLY CASE TEMPERATURE OF 82°C ± 2°C
INTERNAL THERMAL SHUTDOWN	100° C	PCB TEMPERATURE, AUTO RESET, 20°C HYSTERESIS

# ORDERING INFORMATION

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